REMARKS

I. INTRODUCTION

In response to the Office Action dated August 11, 2005, the claims have not been amended. Claims 1-20 remain in the application. Re-consideration of the application is requested.

II. PRIOR ART REJECTIONS

On pages (2)-(6) of the Office Action, claims 1-20 were rejected under 35 U.S.C. §102(b) as being unpatentable by Bopardikar et al., (Bopardikar), U.S. Patent No. 6,826,778.

Specifically, claims 1, 8, 15, and 19 were rejected as follows:

> As to claim 1, Bopardikar discloses an image processing apparatus and method having a computer-readable medium with computer readable instructions configured to store image data with redundant protection comprising:
>
> input means configured to receive an input stream of real-time digital video data (Figure 16 shows the input stream of broadcast video data as further stated in column 5, lines 36-40);
>
> storage means for storing image data (Figure 14 shows the storage medium for storing the data); and
>
> processing means arranged to perform processing operations upon said image data (Figure 16, item 1614 shows the processing means which processes the operations), wherein
>
> said input means receives an input stream of real-time digital video data (Figure 16, line 1615 receives input streams of real-time digital video data as further described in column 17, lines 22-25);
>
> said processing means performs a first writing operation to write said video data to said storage array means in real-time without RAID calculations and without parity (column 2, lines 1-30 describes the processing of the various writing operations while column 27, lines 40+ describes with writing of video data without RAID calculation and parity and thereby meeting the limitation);
>
> said processing means performs a reading operation to read said data from said storage means, perform a data manipulation upon said video data and generate parity information to create protected video data (column 13, lines 52+ and column 14, lines 1-12 describe the processing which performs the reading operations and data manipulations); and
>
> said processing means performs a second writing operation to write said protected video data to said storage means (column 13, lines 21-42 describes the additional writing operation to write the protected video data to the storage means).
>
> Claims 8, 15, and 19, Bopardikar discloses an image processing apparatus and method, as previously discussed in claim 1, with the additional limitation of calculating redundant parity data to generate protected image data (column 22, lines 15-52 describes the determination of redundancy to generate a protected image of the data).

In addition, the Office Action responds to the prior arguments as follows:

> On pages 9-10 applicant argues that Bopardikar et al fails to disclose, teach, or suggest the limitation of "processing means performs a first writing operation to write said video data to said storage array means in real-time without RAID calculations without parity" as recited in Claim 1. It is described in Column 27, lines 40+ the processing of performing a writing operation to write the video data to a storage away without RAID calculations. Furthermore it is noted that the processors within the system makes the RAID calculations not necessary and thereby meeting the limitation to generate the write information. Although all of applicants points are understood the examiner can not agree and therefore the rejection is maintained.

Applicant traverses the above rejections for one or more of the following reasons:

(1) Bopardikar fails to establish a prima facie case of lack of novelty under 35 USC §102;

(2) Bopardikar teaches away from a delayed generation of parity;

(3) Bopardikar fails to teach, disclose, or suggest performing a write operation WITHOUT a RAID calculation;

(4) Bopardikar fails to teach, disclose, or suggest performing a write operation WITHOUT parity;

(5) Bopardikar fails to teach, disclose, or suggest a delayed generation of parity, wherein parity for video data stored in an array is generated during a read operation of the data in the array; and

(6) Bopardikar fails to teach, disclose or suggest writing protected video data (that includes parity data) to a storage means during a second writing operation.

Independent claims 1, 8, and 15 are generally directed to storing image data with redundant protection. More specifically, the claims provide for delaying the performance of RAID calculations including writing parity until after certain processing performed. In this regard, an input stream of real-time digital video data is received. The video data is written to a disk storage array in real time without performing RAID calculations and without parity. In other words, the RAID calculations and parity are withheld during the initial writing operation. A read operation is then performed to read the video data from the storage array. Parity information is generated during the read operation to create protected video data that is then written to the storage array. Accordingly, the parity is not created until after a write operation (i.e., it is performed either during or after a read operation). Thus, as claimed, not only do the claims provide that parity and RAID calculations are not generated during a write operation, but the claims explicitly provide that the parity information is generated

during a subsequent read operation of the data from a storage means. Further, the parity data is then written (as part of protected video data), to the storage array during a second write operation.

The cited reference does not teach nor suggest these various elements of Applicant's independent claims.

Bopardikar merely describes video data in the form of a plurality of digitized frames, is stored on a plurality of magnetic disks. Each image frame is striped across a plurality of disks and redundant parity information, derived from the stripes, is written to an additional disk. Disk failure is detected and in response to this detection missing data is regenerated from the parity information. This allows the transfer of video data in real time to be maintained for output so that the system remains operational. While data is being read in real time, derived from regenerated data, the regenerated data is written to an operational disk, thereby reprotecting the data in the event of a subsequent failure. Frame supplied to output are labelled as being protected or unprotected and application programs may respond to this status information as considered appropriate. (See Abstract).

(1) Bopardikar fails to establish a prima facie case of lack of novelty under 35 USC §102:

Applicant submits that at a minimum, Bopardikar cannot be used to reject the application under an anticipation standard. In this regard, the disclosure of Bopardikar fails to meet the threshold for anticipation, i.e. placing the public in possession of the claimed invention. Specifically, anticipation under 35 U.S.C. § 102 has strict requirements that all elements of the claim must be found in a single reference in order to support an anticipation rejection (see e.g. M.P.E.P. 2131). A claim is anticipated only when a single prior art reference discloses each and every limitation in the claim. See, e.g., *Glaxo Inc. v. Novopharm Ltd.*, 34 USPQ2d 1565 (Fed. Cir. 1995). Bopardikar fails to meet this burden under anticipation. Accordingly, Applicant submits that the rejection under 35 U.S.C. §102 is improper.

In view of the clearly established standards set forth above, Applicant notes that the rejection merely states that Bopardikar's processors within the system make the RAID calculations not necessary and thereby meet the limitation to generate the write information. Such a statement in itself admits that Bopardikar fails teach the explicitly claimed limitation of writing video data in read-

time without a RAID calculation and without parity. Accordingly, at a minimum, an obviousness standard must be relied upon.

Applicant also notes that consistent with the indication made during the Examiner Interview prior to receipt of the final Office Action (i.e., the interview conducted on May 25, 2005 and summarized in the prior response) the Bopardikar reference is commonly owned by the assignee of the present invention and accordingly, should the Patent Office elect to rely on 35 USC 103 instead of 35 USC 102, Applicant reserves the right to utilize 35 USC 103(c) to eliminate any reliance on the Bopardikar reference.

In addition to the lack of any clear description of the RAID calculation and parity during a write operation, Applicant notes that the remainder of Bopardikar clearly teaches away from any such calculations as described in more detail below. Such a teaching away further establishes the failure to establish a prima facie case of anticipation under 35 USC 102.

(2) Bopardikar teaches away from a delayed generation of parity;

The background of the present invention expressly describes the Bopardikar reference:

> [0006] A solution to this problem is described in British patent number 2 312 319B (U.S. patent application Ser. No. 08/843,282, assigned to the present Assignee). In the disclosed system, purpose-built hardware provides an interface between a video environment and a computer environment and video data stored on a computer system takes the form of RGB data with parity. In addition, if a disk failure occurs, it is possible for the lost data to be regenerated (a process usually referred to as "healing") automatically as data is read from the disks during normal operation. However, if no disk failures occur, the data remains in protected form and no additional measures are required in order to generate parity information.

Thus, Bopardikar describes purpose-built hardware to provide various functions. Such purpose-built hardware is lacking from the present claims. In addition, Bopardikar expressly provides throughout the specification that the parity is generated in real time in parallel with buffer writing:

Col. 4, lines 8-12 provide:

> The disks are therefore configured as a redundant array of inexpensive disks (RAID) such that parity data is generated when data is written to the array, allowing any individual disk to be replaced if a head crash occurs without any data actually being lost.

Col. 14, lines 54-56 provide:

> This results in the related parity data being written to parity disk 1425, effectively in parallel with the data being written to disks 1414-1422.

Col. 25, lines 16-22 provide:

> As the incoming data is written sequential to buffer 2401 or buffer 2402, the parity information is generated in parallel such that, on the next frame period, as data is being transferred from a frame buffer to the PCI environment, a complete stripe of parity data will have been generated within the respective stripe buffer 2407 or 2408.

Col. 25, lines 64-67 provide:

This process of reading data, performing an exclusive OR operation and then writing the data back occurs for each stripe within the image frame but insures that the generation of parity data is effected as an on-line, real-time process.

In view of the above cited text, it can be clearly seen that Bopardikar explicitly requires that parity be written in parallel and simultaneously with the writing to buffers or storage. Such an explicit teaching teaches away from the presently claimed invention that requires the first write operation without RAID calculations and without parity.

(3) Bopardikar fails to teach, disclose, or suggest performing a write operation WITHOUT a RAID calculation; (4) Bopardikar fails to teach, disclose, or suggest performing a write operation WITHOUT parity; (5) Bopardikar fails to teach, disclose, or suggest a delayed generation of parity, wherein parity for video data stored in an array is generated during a read operation of the data in the array; and (6) Bopardikar fails to teach, disclose or suggest writing protected video data (that includes parity data) to a storage means during a second writing operation.

Applicant addresses arguments 3-6 herein. Firstly, as indicated above, Bopardikar expressly and explicitly teaches away from the delayed generation of parity and conducting a write operation without RAID calculations. Nothing set forth in the final Office Action even attempts to contradict such a teaching away. In this regard, the final Office Action fails to rely on any text of Bopardikar that sets forth an approach other than that set forth above.

In addition, Applicant notes that the claimed invention must be examined as a whole and whether the "whole" claimed invention would have been obvious at the time of invention (see MPEP §2142). In this regard, not only do the claims provide that the write operation is conducted in real-time without a RAID calculation and without parity, but the claims further provide that the parity is generated during a subsequent read operation of the data written to the storage array. Further, a second operation is then conducted to write that data back to the storage array along with the parity. Such a unique sequence of events and operations are not even remotely contemplated by Bopardikar.

The final Office Action relies on col. 27, lines 40+. Applicant notes that this cited text clearly indicates that while ten stripes of data are being written to the frame buffer, associated parity data is written to a stripe buffer (see col. 27, lines 54-56). Thus, rather than generating parity during

a read operation (that occurs subsequent to a write operation), Bopardikar expressly provides for the generation of parity data and writing of such data to a buffer while the data is written to another frame buffer. Such a teaching again teaches away from the presently claimed invention. Further, such a teaching of the use of parity clearly establishes that Bopardikar's parity is not generated during a read operation of the data that has already been written to a storage array (as claimed). In addition, nowhere in Bopardikar is there a teaching that the parity data and video data (that are combined into protected video data) are written during a subsequent second write operation (as claimed).

In view of the above, Applicants submit that the Office Action fails to consider various aspects of Bopardikar that teach away from the presently claimed invention. Accordingly, the final Office Action fails to establish a prima facie case of lack of novelty.

Further, the various elements of Applicant's claimed invention together provide operational advantages over the systems disclosed in Bipardikar. In addition, Applicant's invention solves problems not recognized by Bipardikar.

Thus, Applicant submits that independent claims 1, 8, 15, and 19 are allowable over Bipardikar. Further, dependent claims 2-7, 9-14, 16-18, and 20 are submitted to be allowable over Bipardikar in the same manner, because they are dependent on independent claims 1, 8, 15, and 19, respectively, and because they contain all the limitations of the independent claims. In addition, dependent claims 2-7, 9-14, 16-18, and 20 recite additional novel elements not shown by Bipardikar.

III. CONCLUSION

In view of the above, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited. Should the Examiner believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call Applicant's undersigned attorney.

Respectfully submitted,

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By their attorneys,

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